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STATE OF MONTANA
SOLID WASTE MANAGEMENT
AND
RESOURCE RECOVERY STUDY

PROJECT GUIDE
JULY 10, 1975

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INTRODUCTION

The purpose of this project guide is to inform those individuals who will be directly involved in the review and completion of the Montana Solid Waste Management and Resource Recovery Study of the anticipated project work program, scheduling and management which will be necessary for the timely completion of the said project.

PART I -- GENERAL

1. Objective of Project

The primary objective of this project is to determine the feasibility of utilizing the combustible fraction of solid waste as an energy source and to also determine the feasibility of recovering secondary materials found in the state's solid waste. Also included in the basic scope of work is the filing of solid waste management plans for each of the twelve planning districts in the state. These management plans will indicate which available solid waste disposal method or methods is most economically feasible and environmentally acceptable.

2. General Procedure

The study will proceed according to the work program which is listed in PART IV. The major tasks which are included in this project are summarized below:

- a. Determine the types and quantities of solid waste generated in the state. This will be accomplished by analyzing existing national, state, county and city solid waste data and conducting solid waste samplings and surveys throughout the state.
- b. Analyze potential markets in the state for the resource recovery of solid waste. This will be accomplished through onsite interviews and inspections.
- c. Review alternative technologies for the energy and material recovery of solid waste generated throughout the state. This will be accomplished by onsite visits of various resource recovery projects presently in operation through the nation and through interviews with specific manufacturers of resource recovery equipment and components.
- d. Develop solid waste facility and management plans for the twelve state planning districts. This will be accomplished by interfacing waste quantities generated in a district with alternative solid waste disposal methods to determine the least cost alternative. Environmental concerns will also be evaluated for each alternative disposal system.



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e. Determine alternative organizational and financial strategies which will be necessary to implement alternative solid waste resource recovery facilities.

3. Filing of Reports

It is anticipated that the consultant will file six major reports during the course of this project. For each report a draft copy will be submitted for review by selected steering and public response committees and by interested state, county and city officials. Comments for each report will then be reviewed and incorporated into final reports.

Listed below are the titles of the six major reports and the anticipated dates each will be filed:

	<u>Draft</u>	<u>Final</u>
1. Population, Employment and Waste Generation Report	December 1, 1975	January 1, 1976
2. Energy and Material Market Report	February 1, 1976	March 1, 1976
3. Alternative Processes Report	March 22, 1976	April 26, 1976
4. Implementation and Financial Report	June 7, 1976	July 7, 1976
5. Regional Management Plans	July 7, 1976	August 1, 1976
6. Final Summary Report	September 15, 1976	November 1, 1976

PART II -- PROJECT CONTACTS

Client: STATE OF MONTANA

Contact: Mr. Terrence D. Carmody, Chief
Solid Waste Management Bureau
Montana Department of Health and
Environmental Sciences
1424 9th Avenue
Helena, Montana 59601
Phone (406) 449-2821

Engineer: HENNINGSON, DURHAM AND RICHARDSON
2225 11th Avenue -- Suite 17
Helena, Montana 59601
Phone (406) 442-7400

Principal In Charge:	Frank A. Borchardt
Project Manager:	Warren C. Heen
Project Engineer:	Barry E. Damschen

PART III -- REPORTING SCHEDULE

1. State Environmental Staff

The consultant will provide the state with a progress report the first of each month. Included in the report will be a short summary of the tasks completed the previous month and a copy of an updated progress report chart which shows the progress of each task. A print of the progress report chart is shown on the following page.

2. Steering Committee

It is anticipated that a technical steering committee will be formed to review material prepared by the consultant. The committee may include representatives from but not limited to the following:

- (1) State of Montana
- (2) Public Officials From Various Cities and Counties
- (3) Labor
- (4) Interest Groups
- (5) Potential Markets for Solid Waste
- (6) Ecology Groups
- (7) Legislators
- (8) Professors

It is anticipated that meetings will be held with the steering committee prior to the filing of all major reports and whenever major milestones and decisions must be made. A minimum of six meetings is anticipated throughout the course of the project.

3. Public Information and Involvement Program

In order for the consultant and the state to keep abreast of the public's reaction and response to the project, Public Perspective Response Panels (PPRP) will be formed for each of the five state planning regions. Selection of members for each panel will be made within the first three to four months of the study. Representatives of the panels will include in addition to county and city officials, interested citizens and organizational groups.

It is anticipated that four informational meetings will be held throughout the project in each region. The dates and locations of each meeting will be determined as the project progresses. During each meeting the consultant will give a progress and informational report to the PPRP in which the members of the PPRP will give suggestions and opinions. It is anticipated that a public presentation will also be held that same evening to inform the general public of the progress and findings to date.

PART IV -- CONTRACT AND SCOPE OF WORK

Included herein is a copy of the contract in which the State of Montana has gone into agreement with the consultant to prepare a Solid Waste Management and Resource Recovery Study. Attached to the contract is the detailed work program for completion of the project.

AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES

THIS AGREEMENT, Made and entered into this 26 day of June, 1975 by and between the State of Montana, hereinafter called State, and Henningson, Durham & Richardson, Inc., of Montana, a Montana corporation, hereinafter called the Consultant.

WITNESSETH:

WHEREAS, State desires the Consultant to prepare a comprehensive feasibility study for solid waste management, energy conservation and resource recovery from solid waste in the State; and

WHEREAS, the Consultant has previously demonstrated their knowledge and expertise in this field; and

WHEREAS, it is contemplated that work shall be carried out by the party hereto as hereinafter set forth:

NOW, THEREFORE, IT IS HEREBY AGREED:

I GENERAL CONDITIONS

A. REGISTERED PROFESSIONAL ENGINEER

The Consultant hereby agrees to affix the seal of a registered professional engineer employed by the Consultant and licensed to practice in the State of Montana on all plans and specifications prepared hereunder.

B. DISPOSITION OF DRAWINGS AND COMPUTATIONS

All drawings, diagrams, reports and copies of computations shall become the property of the State. The State shall have the right to use any or all of said documents for any public purpose.

C. CLAIMS, INDEMNITY AND INSURANCE

1. Claims

The Consultant agrees that it will hold the State and its officers and employees harmless from any claims, suits or damages resulting from or caused by any negligent act or omission of the Consultant, his agents, consultants or employees in the performance of the services provided by this contract.

2. Independent Consultants

It is agreed that nothing herein contained is intended or should be construed in any manner as creating or establishing the relationship of co-partners between the parties hereto, or as constituting the Consultant as the agent, representative, or employee of the State for any purpose or in any manner whatsoever. The Consultant will be and shall remain an independent consultant with respect to all services performed under this Agreement.

3. Insurance

The Consultant shall carry an architects and/or engineers' professional liability insurance policy in the amount of at least \$240,000 and shall provide a certificate of insurance indicating professional liability insurance coverage to the State, which certificate shall be subject to approval as to form by the State. The certificate shall provide that the State shall receive thirty days written notice of cancellation thereof or notice of any material changes or notice of non-renewal of said policy.

The Consultant agrees to indemnify and save harmless the State, its officers, employees and agents from liability and expense caused by accident on account of damage to property or on account of personal injuries including death of any person which accident arises out of negligent acts or conduct or omission of the Consultant, their officers, agents, employees and others acting for or under the direction of the Consultant. The Consultant shall procure and maintain insurance and shall protect the State and others as set forth above as follows:

- a. Comprehensive general liability and auto liability in the amount of \$300,000 (as to each occurrence and aggregate) as to property damage and \$1,000,000 (as to each occurrence and aggregate) as to bodily injury.
- b. Employer's liability including occupational disease in the amount of \$100,000.

D. COMPLIANCE WITH LAWS

The Consultant shall be deemed a Contractor for the application of all provisions hereto and laws against unlawful discrimination as provided hereunder. In accordance with Affirmative Action Policy and policies against discrimination, no person shall, on the grounds of race, creed, color, sex, age, disability or national origin be excluded from full employment rights in, participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program, service or activity for which the parties received, or will receive financial assistance under the provisions of any and all applicable Federal and State laws against discrimination. The Contractor will furnish all information and reports required by the State or by Executive Order No. 11246 and Revised Order No. 4, and by the rules and regulations and orders of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

This agreement may be cancelled or terminated by the State and all money due or to become due hereunder shall be forfeited for a second or any subsequent violation of the terms of this Agreement.

The Consultant warrants that they have not employed or retained any company, or person, other than a bona fide employee working solely for the Consultant, to solicit or secure this contract, and that

they have not paid or agreed to pay any company or person, other than bona fide employees working solely for the Consultant, any fee, commission, percentage, brokerage fee, gifts or any other consideration, contingent upon or resulting from the award or making of this contract.

For breach or violation of this warranty, the State shall have the right to annul this contract without liability, or in its discretion to deduct from the contract price or consideration or otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift or contingent fee. Such rights as provided herein by this paragraph shall be in addition to any other rights the State may have for any breach or violation of this Agreement.

E. TERMINATIONS

If it should become necessary for the State, for reasons beyond its control, to abandon, limit or defer the study or any part thereof, the Agreement may be terminated by the State upon written notice to the Consultant stating the extent and date of termination. In the event of such termination, the amount which the Consultant shall be entitled to receive in final payment for the services performed under this Agreement will be determined in accordance with the work performed to date of termination, by task, as recorded by time charges of personnel engaged in the services. The original copies of all drawings, prints, plans and reports prepared by the Consultant prior to said termination shall become the property of the State. Such termination shall not affect any legal right of the State against the Consultant for any breach of this Agreement.

F. SUBLETTING

The services of the Consultant to be performed hereunder are personal and shall not be assigned, sublet or transferred unless written authority to do so is granted by the State, except the services hereunder may be sublet to any affiliated office of the Consultant.

G. SUCCESSORS AND ASSIGNS

This Agreement shall be binding on successors and assigns of either of the parties.

H. COUNTY INSPECTION

Duly authorized representatives of the State shall have the right to inspect the work of the Consultant whenever they deem it necessary.

I. PAYMENT OF CLAIMS

The Consultant agrees to pay all persons, firms or corporations, having contracts directly with the Consultant or with subcontractors of Consultant, all just claims due them for the payment of material, equipment, services and labor furnished, and for the payment of material and equipment rental which is actually used or rented in the performance of this Agreement.

J. EMPLOYMENT

The Consultant agrees not to engage the services of any person or persons in the employ of the parties of the first part in an engineering capacity, on either a full or part-time basis, on the date of this contract, without the written consent of the employer of such person.

K. FUTURE CONTRACTS

If during said study or after completing same, the State shall decide to construct any facilities or desire to have additional engineering studies or work performed, the Consultant agrees to perform same if a mutually acceptable contract or contracts with respect thereto can be negotiated between the parties.

L. MATERIALS TESTING

The Consultant's services do not include the testing of materials such as concrete reinforcing steel, soil testing, test drilling, analyses, etc. These services, rendered by commercial testing laboratories, shall be paid for directly by the State. The Consultant's services do, however, include laboratory tests to determine moisture contents for a maximum of 50 samples of solid waste.

M. SUPPLEMENTAL AGREEMENTS

If the project or scope of services as defined in Article II are changed due to modifications introduced or accepted by the State due to conditions beyond the control of the Consultant, and which the Consultant could not have reasonably foreseen, the Consultant shall review its costs in order to determine the proper amount by which its compensation should be adjusted. Adjustment of the compensation would be by supplemental agreement between the State and the Consultant regarding a change in the lump sum amount of compensation. The Consultant will implement the necessary changes after receipt of written order from the State.

N. DISPUTES

Any dispute concerning a question of fact in connection with the work, not disposed of by this Agreement, shall be referred for determination to the State or its duly authorized representative, whose decision in the matter shall be final and conclusive upon the parties hereto, unless thereafter determined by a Montana State or a Federal Court of competent jurisdiction to be erroneous after review de novo. Pending final determination of any dispute hereunder, the Consultant shall proceed diligently with the performance of the work.

O. STATE REQUIREMENTS

The State is partly funding this study with funds from the Environmental Protection Agency (EPA). By entering this Agreement, the Consultant agrees to abide by the appropriate provisions of the State grant with EPA.

II SCOPE OF SERVICESA. SERVICES BY CONSULTANT

The Consultant shall:

1. Make all necessary studies, computations and investigations and provide a written report for investigations for energy and resource recovery and solid waste management for the State, as described in the attached Appendix "A", "Work Program for Montana State Solid Waste Management Resource Recovery Study".
2. Be completely responsible for the adequacy and propriety of all phases of that portion of the study under the Consultant's direction. The Consultant's findings, recommendations, and professional advice will be performed in accordance with generally accepted professional engineering practices.
3. The scope of services for this project consists of the following study elements, which said study elements are described in depth on Appendix "A". The estimated compensation for the services is shown after each study element.

<u>Part No.</u>	<u>Description</u>	<u>Compensation</u>
One	Project Development and Management	\$21,420.
Two	Assemble Basic Data	66,080
Three	Analyze Markets	19,870
Four	Evaluate Applicable Alternative Technologies for Energy and Materials Recovery	19,680
Five	Develop Solid Waste Facilities Plan by District for Each of the State Planning Regions	26,480
Six	Evaluate Environmental Concerns	16,190
Seven	Develop and Evaluate Alternative Implementation and Organizational Strategies for Energy and Resource Recovery	17,630
Eight	Prepare Final Solid Waste Management Plan for Each Planning Region	20,990
Nine	Prepare Final Summary Report	31,660

B. SERVICES BY THE STATE

The State shall:

1. Make available to the Consultant all pertinent State, County, and City records and documents pertaining to this study which would assist the Consultant in the assembly of data necessary for the preparation of the report.
2. Examine all preliminary studies, reports, sketches, drawings, and other documents presented by the Consultant and render decisions pertaining thereto.

3. Designate persons to act as State representatives with respect to the work to be performed under this agreement. Such persons shall have complete authority to transmit instructions, receive information, interpret and define the State's policies and decisions with respect to materials, equipment, elements and systems pertinent to the work covered by this Agreement.
4. Give prompt written notice to the Consultant whenever the State observes or otherwise becomes aware of any error, omission or need for modification in the study.
5. Provide the services of special legal, auditing or financial council as maybe necessary in connection with those aspects of this Agreement.

III TIME SCHEDULE

A. FINAL REPORT

Work shall begin with Part One upon execution of this Agreement. All work included in this Agreement shall be completed on or before November 1, 1976.

B. TIME EXTENSIONS

The State may extend the aforesaid time completion period upon written request from the Consultant because of delays encountered that are beyond his control. The extent of this time extension shall be determined by the State.

IV PAYMENTS TO CONSULTANT

A. TOTAL COST

1. The State shall pay to the Consultant the lump sum of Two Hundred Forty Thousand Dollars (\$240,000.00) which shall be compensation in full for all costs of the services provided herein to be performed by the Consultant.
2. Payment will be made by the State on a quarterly basis following invoicing by the Consultant for the weighted percentage of the project completed at the time of invoicing less ten percent retainer to be released upon completion and acceptance of the project.

IN TESTIMONY WHEREOF, the parties hereto have caused this Agreement to be executed by their respective duly authorized officers as of the day and year first above written.

HENNINGSON, DURHAM & RICHARDSON, INC., of Montana

by: Sharon E. Green Asst. Vice Pres.
Signature Title

Subscribed and sworn to before me this 26 day of June, 1975.

Joanne Romaske
Notary Public for the State of Montana
Residing at East Helena, Montana
My commission expires January 10, 1976

OWNER: State of Montana
Department of Health & Environmental
Sciences

Attest

R. A. James

John D. Anderson
Director

APPENDIX "A"

WORK PROGRAM

FOR

MONTANA STATE SOLID WASTE MANAGEMENT RESOURCE RECOVERY STUDY

PART ONE: PROJECT DEVELOPMENT AND MANAGEMENT

Task 1100: Develop Preliminary Project Plan

- 1110. Develop a detailed work program, including major tasks and subtasks, personnel requirements, and projected costs for conducting and completing the study.
- 1120. Use critical path scheduling techniques to determine personnel and scheduling requirements to complete the project within time and financial constraints.
- 1130. Determine reporting requirements to keep all necessary parties appraised of project progress, including task accomplishments, personnel loadings and overall project costs.
- 1140. Summarize foregoing and other appropriate charts, drawings, etc. into a brief report for review with the Solid Waste Management Bureau (SWMB).
- 1150. Print sufficient copies for limited distribution as directed by the SWMB.

Task 1200: Project Management

- 1210. For the duration of the project, utilize the critical path and the project plan to coordinate and monitor progress and direct the commitment and expenditure of allocated resources. This task will be assigned to the Project Manager for the consultant who will report directly to the SWMB.
- 1220. Prepare six project reviews at appropriate intervals for presentation to the Steering Committee.

Task 1300: Develop and Conduct Public Information and Involvement Program

- 1310. Develop with the SWMB a strategy for establishing continuing communication with the Steering Committee, with local elected officials and with the general public through scheduled progress reports, news media, and other appropriate means. Included in this task is involvement in the selection of members to a Public Perspective Response Panel (PPRP) for each of the five state planning regions. To keep the PPRP and the public informed on the status of the project, it is anticipated that four informational meetings will be conducted throughout the study in each of the five regions.

- 1320. Develop appropriate visual aids which can be used and updated throughout the project to illustrate project progress.
- 1330. Develop a slide presentation which can be updated as appropriate to illustrate project components, progress and State-of-the-Art technology.

PART TWO: ASSEMBLE BASIC DATA

Task 2100: Assemble Available Population and Employment Data

- 2110. Obtain available population and employment data, by county, for the present through the year 2000.
- 2120. For the larger metropolitan areas, obtain available population and employment data by some zonal network (traffic survey zone, or other) for the present through the year 2000.

Task 2200: Determine Present Waste Generation and Project Future Quantities

- 2210. In cooperation with the SWMB, select twelve communities or areas which represent a cross-section of the population within the state. This will include large cities, small cities and rural communities.
- 2220. For each of the twelve areas selected, obtain available solid waste generation data from the communities, from the county, from the SWMB, from cooperative major private haulers, and from past studies and reports.
- 2230. Obtain available data from other reliable sources, such as E.P.A., the National Center for Resources Recovery, other ongoing resources recovery projects, and the consultant's files to augment available local solid waste generation and composition data.
- 2240. Evaluate the data collected in Subtasks 2220 and 2230 to determine its adequacy and/or the need to augment it for specific areas with site surveillances. In cooperation with the SWMB, select facilities to be surveyed. A maximum of twelve surveillances are anticipated in the basic scope of work. It is also anticipated that the SWMB will provide one man for assistance and training in conducting the surveillances.
- 2250. To augment the surveillance data conducted in Task 2240, determine with the SWMB which disposal facilities should be sampled to determine solid waste composition and moisture content. It is anticipated that the waste composition will be obtained by hand sorting selected samples for

the various constituents found in the solid waste stream. Moisture contents will be determined by a qualified laboratory. A maximum of 50 samples are anticipated in the basic scope of work.

- 2260. Process the surveillance data and combine with other available data to determine waste generation rates and composition for each of the twelve selected areas.
- 2270. Interface the waste generation and composition data determined in Task 2260 with the population and employment data and project quantities and composition, by county and/or major jurisdictions for the present and through the year 2000.

Task 2300: Identify and Evaluate Special Potentially Recoverable Wastes

- 2310. From a review of state commerce and industry records, and in cooperation with the SWMB, identify major commercial and industrial activities which are generators of significant quantities of potentially recyclable wastes. The following listing is an example of the activities or wastes to be included. The list is not all inclusive; there are undoubtedly others which will be added as the study progresses.

- .old used tires
 - .forest products industry wastes
 - .mining and smelting
 - .paper mills
 - .meat packing industry wastes
 - .sugar beet industry wastes
 - .wastewater treatment sludges

- 2320. Evaluate the potential for continued generation of each waste type, and the respective increase or decline thereof, and project waste quantities to the year 2000.

Task 2400: Prepare Population, Employment and Waste Generation Report

- 2410. Prepare a draft final report summarizing the population, employment, waste quantities and composition investigations and conclusions conducted herein.
- 2420. Print 50 copies of the draft report for review and comment.
- 2430. Incorporate comments and print 200 copies of the final report.

PART THREE: ANALYZE MARKETS

Task 3100: Identify and Evaluate Potential Markets for Utilizing Solid Waste as an Energy Source

- 3110. Identify known and potential major customers for utilizing solid waste as an energy source. For them, ascertain the following:

- a) quantity, quality and delivery conditions which would have to be met for marketability.
- b) present and alternative fuel sources and costs.
- c) total annual demand and relevant demand fluctuations--prepare composite demands for potential users in local areas.
- d) onsite space on required facilities.
- e) alternatives for transporting energy or solid material from point of processing or conversion to customers location.
- f) preliminary review of potential environmental concerns resulting from utilizing solid waste as an energy source.

3120. From reliable reports from ongoing projects, and from onsite visits if warranted, evaluate recent and continuing technological developments for using solid wastes as an energy source and determine their potential applicability for the market situations identified in Subtask 3110.

Task 3200: Identify and Evaluate Potential Markets for Raw or Recoverable Waste Components

3210. Identify and investigate secondary materials markets in Montana.
- a) determine the extent and limitations of existing markets for each potentially recoverable component.
 - b) evaluate potential for market expansion.
 - c) determine quantity, quality and delivery conditions which must be met for marketability.
3220. Identify secondary materials markets which exist elsewhere, but not in Montana. Evaluate the potential for developing these markets locally.
3230. Review existing and proposed state and federal legislation pertaining to resources recovery and source reduction and evaluate the potential impact thereof on the local situation.
3240. Identify and evaluate the potential for marketing compost from processed solid waste and possibly sewage sludge.

Task 3300: Prepare Energy and Materials Markets Report

3310. Prepare a draft final report summarizing the potential fuel market and secondary material market investigations conducted herein.

3320. Print 50 copies of the draft report for review and comment.

3330. Incorporate comments and print 200 copies of the final report.

PART FOUR. EVALUATE APPLICABLE ALTERNATIVE TECHNOLOGIES FOR
ENERGY AND MATERIALS RECOVERY

Task 4100: Determine Process and Equipment Requirements to
Accomplish Secondary Materials Recovery and Waste
Utilization by Potential Energy Users

4110. Determine the necessary processing facilities, equipment, and site requirements which would be required to produce an acceptable commodity for the various potential markets.

4120. Develop alternative conceptual designs and preliminary cost estimates, including capital, operation and maintenance costs for the required processing and energy conversion facilities.

4130. Develop conceptual designs and preliminary cost estimates for auxiliary facilities, such as transfer stations, which may be required to make the system cost effective and for landfills for residue and reject materials.

4140. For the major and most probable users of solid waste as an energy source, work with their representatives to determine the facilities required and the preliminary cost estimates for modifying existing or providing new facilities for solid waste energy utilization.

Task 4200: Determine Process and Equipment Requirements for Producing
Solid Waste Compost for Use as a Soil Conditioner

4210. For applicable situations, determine the necessary processing facilities, equipment and site requirements to produce an acceptable commodity.

4220. Develop conceptual designs and preliminary cost estimates, including capital, operation and maintenance costs for the required facilities.

Task 4300: Prepare Alternative Processes Report

4310. Prepare a draft final report summarizing the alternative process investigations conducted herein.

4320. Print 50 copies of the draft report for review and comment.

4330. Incorporate comments and print 200 copies of final report.

PART FIVE: DEVELOP A SOLID WASTE FACILITIES PLAN BY DISTRICT
FOR EACH OF THE FIVE PLANNING REGIONS

Task 5100: Develop Preliminary Solid Waste Transfer, Processing and
Utilization Facilities Location Plan

- 5110. Assemble the waste quantities in each planning district as determined in Task 2200 in waste generation zones. The generation zone boundaries should follow some convenient existing jurisdictional boundary, preferably those of cities, counties or townships. Determine activity centroids for each waste generation zone.
- 5120. From the facility site requirements determined in Subtask 4110 and based on waste generation by zone, locations of potential markets, and present and future transportation facilities, identify, evaluate and select potential sites for alternative facilities which are to be considered.
- 5130. Use available street and highway network data to evaluate alternative configurations and determine competitive least cost solutions.
- 5140. For selected general facility locations, review the area(s) for specific siting and determine zoning, special use and environmental restrictions, if any, and estimate costs for purchase.

Task 5200: Interim Review of Alternatives

- 5210. Review alternative solutions for each planning district with the SWMB and with other officials and citizen groups as directed, to determine which solutions should be given additional evaluation.

Task 5300: Refine Preliminary Facilities Designs and Cost Estimates

- 5310. For selected facilities, complete schematic diagrams for process and facility layouts, refine preliminary cost estimates, and determine specific site requirements.
- 5320. Refine site selections for specific facilities.

Task 5400: Prepare Five Planning Region Facility Plans

- 5410. Incorporate the alternative process and facility investigations for each of the twelve planning districts into five regional solid waste facility plans utilizing appropriate charts, graphs, drawings, etc., and the consultants' recommendations and conclusions.
- 5420. Print 50 copies of the solid waste facilities plan for each of the five planning regions.
- 5430. Review the five plans with SWMB and with each planning region Public Perspective Response Panel for comment.

PART SIX: EVALUATE ENVIRONMENTAL CONCERNS

Task 6100: Review Technical Environmental Considerations

6110. For each selected alternative and facility, as outlined in the five facility plans, identify and review the following locational environmental considerations.
- a) impact of increased traffic and local noise levels, traffic congestion and vehicle emissions.
 - b) relative impact on localized ambient air quality.
 - c) aesthetics relative to present and projected surrounding land use.
 - d) heated air and water discharges, if any.
6120. For each selected energy and resource recovery facility, evaluate the technical environmental impact of:
- a) a significant reduction in specific components, i.e. paper, plastics and metals, resulting from various potential state and federal legislative proposals to effect source reduction.
 - b) the availability of alternative fuels (applicable only to recommended systems using solid waste as a primary fuel source).
 - c) system failure and the need for redundant, or backup facilities.
6130. For the overall project, identify and briefly review potential positive effects relative to environmental pollution abatement and resources and energy conservation.
6140. Summarize into a brief environmental review and present for review by the SWMB.

PART SEVEN: DEVELOP AND EVALUATE ALTERNATIVE IMPLEMENTATION AND ORGANIZATIONAL STRATEGIES FOR ENERGY AND RESOURCES RECOVERY

Task 7100: Determine Legislative, Political and Contractural Impediments and Requirements for Implementation of the Energy and Resources Recovery Plan

7110. Review existing legislation and local ordinances relative to control and ownership of solid wastes.
7120. Review existing legislation relative to organizational structures and methods of financing for implementing the proposed project.
7130. Review existing contractual arrangements for solid waste collection and disposal and determine their impact on alternative implementation strategies.

7140. In cooperation with the SWMB, their legal and bond council, and with other local officials as directed, develop a program to address existing impediments and to develop legislation which may be required for implementation of the project.
7150. Determine contractual requirements and develop model documents for:
- a) sale of energy
 - b) securing raw waste supply
 - c) sale of recovered components
 - d) disposal of ash and/or other residue
 - e) utilization of existing power plants and/or other energy recovery and distribution systems.

Task 7200: Develop Alternative Organizational and Financing Strategies for Implementation

7210. Evaluate alternative structures, for implementing all or parts of the proposed plan and for operating the required facilities.
7220. Determine administrative staffing requirements for alternative structures.
7230. Determine project financial requirements; develop and evaluate options for meeting same.
7240. In cooperation with the SWMB and with other local officials, as directed, develop an implementation strategy that is responsive to the technical, administrative, political and social factors that must be considered for successful implementation.

Task 7300: Prepare Implementation Report

7310. Prepare a draft report summarizing the implementation and organizational strategies required for an energy and resource recovery program.
7320. Print 50 copies of the draft report for review and comment.
7330. Incorporate comments and print 150 copies of final report.

PART EIGHT: PREPARE FINAL SOLID WASTE MANAGEMENT PLAN FOR EACH PLANNING REGION

Task 8100: Develop Solid Waste Management Plans

8110. Incorporate comments received in Subtask 5430 into final draft solid waste management plans for each planning district.

- 8120. Add summary of interim reports and comments from Parts Six and Seven to draft solid waste management plans.
- 8130. Incorporate information and data from district solid waste management plans into five draft regional solid waste management plans.
- 8140. Print 50 copies of the draft solid waste management plans for each of the five planning regions for review by SWMB and PPRP in each region.
- 8150. Incorporate comments and print 150 copies of final solid waste management plans for each region.

PART NINE: PREPARE FINAL SUMMARY REPORT

Task 9100: Draft Final Report

- 9110. Prepare a final draft report which will include a summary of all previous interim reports and regional solid waste management plans and the consultant's conclusions and recommendations addressing the technical and economic feasibility of recovering energy and other marketable resources from solid wastes in Montana.
- 9120. Print 250 copies of the final draft for review and comment.

Task 9200: Complete Final Summary Report

- 9210. Incorporate comments received during the review and print 1,000 copies of the final summary report for general distribution.

PART V -- PROJECT MANAGEMENT AND SCHEDULE

Included herein is the project management chart, the estimated production time schedule and the detailed critical path diagram for the project. All are essential for the successful completion of the project within the given time schedule.

PROJECT MANAGEMENT CHART

SOLID WASTE MANAGEMENT BUREAU
MONTANA DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

TERRENCE D. CARMODY

MANAGEMENT SUPPORT
M.L. SMITH, P.E., V.P.
P.R. OMBRUNI, P.E., V.P.

PROJECT MANAGER
WARREN HEEN, P.E.

PRINCIPAL-IN-CHARGE
FRANK BORCHARDT, P.E.
ASSISTANT VICE PRESIDENT

PROJECT ENGINEER
BARRY DAMSCHEN

SENIOR ADVISORS
H.D. FUNK P.E.
L. RUSSELL P.E.
F. FORSBERG P.E.

PRIMARY WORK EFFORT

WARREN HEEN
BARRY DAMSCHEN
ENGINEER (HELENA)
DICK BELL
WIN BABER

SPECIALISTS AVAILABLE AS REQUIRED

HARVEY FUNK - SOLID WASTE PROCESSING
JIM BIERMAN } - ENERGY RECOVERY ALTERNATIVES
BILL HAZELL }
FRANK BORCHARDT } - ORGANIZATIONAL STRUCTURES &
RUSS PETERSON } - PROJECT IMPLEMENTATION
LEE SNYDER - ECONOMICS & FINANCING
DR. GEO. HADDIX - SYSTEMS ANALYSIS & DATA PROCESSING
ART MEYER - SLUDGE UTILIZATION

PRODUCTION SCHEDULE MONTANA RESOURCE RECOVERY PROGRAM



